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Webometric Analysis of Selected University Library Websites of India

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Webometric Analysis of Selected University Library Websites of India

Abstract

Libraries all over the world are in the race to offer high quality online information sources on their websites. In this electronic age libraries are witnessing various challenges in terms of internet, which makes world linked and attached to each other. Another big challenge is survival of libraries in global world. Libraries are always at forefront to accept the challenges in order to provide the users various types of online services and sources of information, these all-online sources are being host on library websites. Users usually prefer to cater their information needs at internet; library websites provide them one stop shop to their maximum information needs. Libraries collaborate with various libraries and share sources in order to make ease of users while crunching their needs. The study highlights the various web impact factors of selected university library websites viz *simple web impact factor (SWIF), external web impact factor (EWIF) and Internal web impact factor (IWIF).*

Keywords: library websites, webometeric analysis, university library.

Introduction

Actually, the concept of webometrics emerged from bibliometrics that is bibliometric analysis of research articles or journal articles. Same effect has been applied to the web with various search engines and crawlers. **Almind and Ingwersen (1997)** defined the field and gave it its name. Webometrics usually evaluation of the various domains of the web such as web sites, web pages, parts of web pages, words in web pages, hyperlinks, and search engine results. **Ingwersen (1998)** in his highly cited article proposed a new measurement for calculating the online impact of areas of the Web, including university web sites. From last two decades, webometrics was central point of most researchers from the diverse fields, and interesting is a good number of studies on University websites are also carried by researchers across disciplines (**Kousha, 2005).** The main core areas of webometrics based on quantitative study of web related phenomenon are web page content analysis; web link structure; web usage analysis and web technology analysis.

Review of Related Literature

Much literature is available on webometrics, hence attention is made to highlight few studies here Much literature is available on webometrics, hence attention is made to highlight few studies here. **Ramanayaka, Chen and Shi (2018)** study on the application of webometric techniques for measuring the visibility of websites of libraries in his work webometric analysis of library websites in Srilanka**. Dastani, Atarodi & Panahi (2018)** conducted a bibliometric survey on the website of Iranian digital libraries and revealed that low performance was witnessed in terms of indexing. **Brahma and Verma (2018)** in India conducted a similar study on bibliometric analysis of library websites of top universities ranked by NIRF. The study concluded that there is a need for improvement in various aspects of library websites. **Chua and Goh (2010**) carried another study on library websites and social media tools. They evaluate library websites in terms of the impact of web 2.0 tools and correlation of library websites with web 2.0 tools. **Isidro and Aguillo (2018)** conducted a survey on open repositories websites and adopted a webometric approach of evaluation of selected repositories. **Jeyshankar & Babu (2009); Gupta & Walia (2016)** conducted two separate studies in Tamil Nadu and Africa on library

websites. Both the studies revealed the negative results in terms of internal links are concerned and were contradictory with WIF based on Link analysis. **Patel and Parmar (2015)** conducted a study on All India Institute of Medical Sciences (AIIMS) websites, at that time there were only seven AIIMS in India. The study concluded with these words that there is low visibility of AIIMS websites on the World Wide Web. **Shukla and Poluru (2009)** carried out an earlier similar study**.** The study highlighted that comparatively, university websites are having better visibility. The study was confined to selected state universities of India.

Scope: The scope of the study is limited to the top 25 university library websites of India ranked by QS BRICS ranking 2019 as mentioned in Table 1.

Objectives

1. To analyze the URL of universities library websites ranked by QS BRICS.

2. To determine the number of WebPages and Domain authority of selected universities library websites ranked by QS BRICS.

3. To identify the simple web impact factor (SWIF), external web impact factor (EWIF) and internal web impact factor (IWIF) of selected universities library websites ranked by QS BRICS.

Methodology

Survey method coupled with online visits was carried to identify and select the top 25 Indian universities in QS BRICS Ranking 2019. Launched in 2013, "*The QS BRICS University Rankings is an annual ranking of the top universities in the five BRICS countries - Brazil, Russia, India, China and South Africa"*. The project, developed by QS in collaboration with Russian news agency Interfax, emerged from a desire to better highlight and track progress made by each of the five BRICS countries in the higher education field, and to facilitate comparison of universities in nations that share certain key socio-economic dynamics (**BRICS Ranking, 2018).**

Data were collected from the library websites by using tool called Open Site Explorer (www.opensiteexplorer.org) which is an optimization tool , actually a search engine for links. It is one of the essential tools to be used as a part of off-site search engine optimization. In addition, data was crossed checked by using SocSciBot, it is a web crawler designed for webometrics research. It has been used in more than 50 research articles on webometrics, as tool for data collection and analysis **(Michael and Mike 2009).**

Data Analysis and interpretation

Table 1. Hyperlinks of Selected University Library Websites

S No	BRICS Ranking	Name of universities	Library Hyperlink
1	8	Indian Institute of Technology Bombay (IITB)	https://www.library.iitb.ac.in/
2	10	Indian Institute of Science	https://www.iisc.ac.in/jrd-tata-memorial-library/
3	17	Indian Institute of Technology Madras (IITM)	http://www.cenlib.iitm.ac.in/
4	18	Indian Institute of Technology Delhi (IITD)	http://library.iitd.ac.in/
5	23	Indian Institute of Technology Kharagpur (IIT-KGP)	http://www.library.iitkgp.ac.in/
6	25	Indian Institute of Technology Kanpur (IITK)	http://pkklib.iitk.ac.in/
7	36	University of Hyderabad	http://igmlnet.uohyd.ac.in:8000/
8	42	University of Delhi	http://crl.du.ac.in/
9	47	Indian Institute of Technology Roorkee (IITR)	http://mgcl.iitr.ac.in/
10	48	Indian Institute of Technology Guwahati (IITG)	https://www.iitg.ac.in/lib/
11	68	University of Calcutta	http://www.caluniv.ac.in/libraries/library.html
12	75	Jadavpur University	http://www.jaduniv.edu.in/templates/newpages/library.html
13	87	Anna University	https://www.annauniv.edu/Library/
14	89	University of Mumbai	http://mu.ac.in/portal/services/library/
15	90	Banaras Hindu University	http://internet.bhu.ac.in/bhulibrary/index.html
16	94	Indian Institute of Technology Hyderabad	https://library.iith.ac.in/
17	96	Birla Institute of Technology and Science, Pilani	http://www.bits-pilani.ac.in/library
18	97	Indian Institute of Technology Indore	http://library.iiti.ac.in/
19	100	Savitribai Phule Pune University	http://lib.unipune.ac.in:8002/
20	104	Alagappa University, Karaikudi	https://www.alagappauniversity.ac.in/research/41
21	107	Indian Institute of Technology Bhubaneswar	http://library.iitbbs.ac.in/
22	107	Indian Institute of Technology Ropar	http://www.iitrpr.ac.in/library
23	109	Symbiosis International (Deemed University)	https://www.library.siu.edu.in/
24	115	Institute of Chemical Technology (UDCT), Mumbai	http://www.ictmumbai.edu.in/DisplayPage.aspx?page=q
25	119	Indian Institute of Information Technology (IIIT) - Allahabad	https://www.iiita.ac.in/campus_life/library/

Table 2. Domain Authority and Page Authority of selected library websites.

S No.	University Name	Domain Authority	Page Authority

1	Indian Institute of Technology Bombay (IITB)	75 (5.33)	52 (5.72)
2	Indian Institute of Science	52 (3.70)	29 (3.19)
3	Indian Institute of Technology Madras (IITM)	70 (4.98)	51 (5.61)
4	Indian Institute of Technology Delhi (IITD)	64 (4.55)	45 (4.95)
5	Indian Institute of Technology Kharagpur (IIT-KGP)	64 (4.55)	36 (3.96)
6	Indian Institute of Technology Kanpur (IITK)	73 (5.19)	46 (5.06)
7	University of Hyderabad	50 (3.55)	27 (2.97)
8	University of Delhi	66 (4.69)	47 (5.17)
9	Indian Institute of Technology Roorkee (IITR)	56 (3.98)	42 (4.62)
10	Indian Institute of Technology Guwahati (IITG)	56 (3.98)	38 (4.18)
11	University of Calcutta	55 (3.91)	42 (4.62)
12	Jadavpur University	49 (3.48)	27 (2.97)
13	Anna University	63 (4.48)	35 (3.85)
14	University of Mumbai	57 (4.05)	36 (3.96)
15	Banaras Hindu University	57 (4.05)	34 (3.74)
16	Indian Institute of Technology Hyderabad	54 (3.84)	39 (4.29)
17	Birla Institute of Technology and Science, Pilani	54 (3.84)	33 (3.63)
18	Indian Institute of Technology Indore	49 (3.48)	36 (3.96)
19	Savitribai Phule Pune University	56 (3.98)	29 (3.19)
20	Alagappa University, Karaikudi	49 (3.48)	26 (2.86)
21	Indian Institute of Technology Bhubaneswar	48 (3.41)	34 (3.74)
22	Indian Institute of Technology Ropar	50 (3.55)	36 (3.96)
23	Symbiosis International (Deemed University)	45 (3.20)	30 (3.30)
24	Institute of Chemical Technology (UDCT), Mumbai	43 (3.06)	27 (2.97)
25	Indian Institute of Information Technology (IIIT) – Allahabad	50 (3.55)	32 (3.52)
	Total	**1405 (100)**	**909 (100)**

*Figures in parenthesis indicates percentage

Page Authority and Domain Authority (DA) of Selected University Library Websites: The analysis of data reveals that the Indian Institute of Technology Bombay (IITB) library website has highest Domain Authority 75 (5.33%) followed by Indian Institute of Technology Kanpur (IITK) with 73 (5.19%) and library website of Indian Institute of Technology Madras (IITM) with 70 (4.98%). Similarly the lowest DA was determined in the library website of Institute of Chemical Technology (UDCT), Mumbai with 43 (3.06%), followed by Symbiosis International (Deemed University) with 45 (3.20%) and Indian Institute of Technology Bhubaneswar with 48 (3.41%).

The data further revealed that the maximum Page Authority (web pages) were found in the library website of Indian Institute of Technology Bombay (IITB) with 52 (5.72%) followed by Indian Institute of Technology Madras (IITM) with 51 (5.61%) and University of Delhi with 47 (5.17%). While analyzing the data keenly, it reveals that the minimum number of web pages were found in the library websites of Alagappa University, Karaikudi with 26 (2.86%) followed by library websites of Jadavpur University and Institute of Chemical Technology (UDCT), Mumbai with equal number of web pages that is 27 (2.97%) (Table 2).

Table 3. External Links, Internal Links And Total Links of Selected Library Websites.

S No.	University Name	External Links	Internal Links	Total Links
1	Indian Institute of Technology Bombay (IITB)	4656 (10.61)	38920 (6.47)	43665 (6.76)
2	Indian Institute of Science	0 (0)	597 (0.09)	598 (0.09)
3	Indian Institute of Technology Madras (IITM)	1688 (3.84)	625 (0.10)	2408 (0.37)
4	Indian Institute of Technology Delhi (IITD)	3676 (8.38)	9753 (1.62)	13476 (2.08)
5	Indian Institute of Technology Kharagpur (IIT-KGP)	1772 (3.92)	68 (0.01)	2372 (0.36)
6	Indian Institute of Technology Kanpur (IITK)	26721 (60.92)	7564 (1.25)	34295 (5.30)
7	University of Hyderabad	0 (0)	0 (0)	0 (0)
8	University of Delhi	171 (0.38)	899 (0.14)	1183 (0.18)
9	Indian Institute of Technology Roorkee (IITR)	437 (0.99)	528 (0.08)	1020 (0.15)
10	Indian Institute of Technology Guwahati (IITG)	207 (0.47)	38 (0.006)	255 (0.03)
11	University of Calcutta	1278 (2.91)	29 (0.004)	1593 (0.24)
12	Jadavpur University	0 (0)	0 (0)	0 (0)
13	Anna University	3 (0.006)	8 (0.001)	21 (0.003)
14	University of Mumbai	6 (0.013)	653 (0.10)	663 (0.10)
15	Banaras Hindu University	18 (0.41)	9786 (1.62)	9804 (1.51)
16	Indian Institute of Technology Hyderabad	55 (0.12)	11920 (1.98)	11997 (1.85)
17	Birla Institute of Technology and Science, Pilani	2 (0.004)	485822 (80.87)	485831 (75.22)

18	Indian Institute of Technology Indore	149 (0.33)	204 (0.03)	361 (0.05)
19	Savitribai Phule Pune University	0 (0)	0 (0)	0 (0)
20	Alagappa University, Karaikudi	0 (0)	931 (0.15)	931 (0.14)
21	Indian Institute of Technology Bhubaneswar	2544 (5.80)	14610 (2.43)	17176 (2.65)
22	Indian Institute of Technology Ropar	133 (0.30)	17597 (2.92)	17736 (2.74)
23	Symbiosis International (Deemed University)	343 (0.78)	1 (0.0001)	344 (0.05)
24	Institute of Chemical Technology (UDCT), Mumbai	0 (0)	4 (0.0006)	9 (0.001)
25	Indian Institute of Information Technology (IIIT) - Allahabad	2 (0.004)	116 (0.01)	124 (0.01)
	Total	43861 (100)	600673 (100)	645862 (100)

*Figures in parenthesis indicates percentage

Links of selected university Library websites: While analyzing the links of selected 25 university library websites its evident that the total number of links 645862 is a good score but 43861 External Links is a sign of negativity and 600673 Internal Links still is not a bad score. Further the data revealed that the library website of Birla Institute of Technology and Science, Pilani occupied 1st rank in total number of links that is 485831 (75.22%) followed by library website of Indian Institute of Technology Bombay (IITB) with 43665 (6.76%) and library website of Indian Institute of Technology Kanpur (IITK) with 34295 (5.30%). Furthermore, the data revealed that the library website of Indian Institute of Technology Kanpur (IITK) occupied rank 1st with total number of External Links 26721 (60.92%) followed by library website of Indian Institute of Technology Bombay (IITB) with 4656 (10.61%) External Links and Indian Institute of Technology Delhi (IITD) with 3676 (8.38%), External links. Similarly while analyzing the Internal links of selected University Libraries the data revealed that the Library website of Birla Institute of Technology and Science, Pilani occupied rank 1st with 485822 (80.87) number of external links followed by library website of Indian Institute of Technology Bombay (IITB) with 38920 (6.47) number of external links and library website of Indian Institute of Technology Ropar with 17597 (2.92) external links (Table 3).

Table 4. Various impact factors of selected library websites.

S No.	University Name	SWIF	IWIF	EWIF	AWIF
1	Indian Institute of Technology Bombay (IITB)	839.7115385	748.4615	89.53846	1178.737
2	Indian Institute of Science	20.62068966	20.58621	0	27.48276
3	Indian Institute of Technology Madras (IITM)	47.21568627	12.2549	33.09804	84.39869
4	Indian Institute of Technology Delhi (IITD)	299.4666667	216.7333	81.68889	453.4
5	Indian Institute of Technology Kharagpur (IIT-KGP)	65.88888889	1.888889	49.22222	115.7407
6	Indian Institute of Technology Kanpur (IITK)	745.5434783	164.4348	580.8913	1381.246
7	University of Hyderabad	0	0	0	0
8	University of Delhi	25.17021277	19.12766	3.638298	35.1844
9	Indian Institute of Technology Roorkee (IITR)	24.28571429	12.57143	10.40476	38.88095
10	Indian Institute of Technology Guwahati (IITG)	6.710526316	1	5.447368	12.49123
11	University of Calcutta	37.92857143	0.690476	30.42857	68.5873
12	Jadavpur University	0	0	0	0
13	Anna University	0.6	0.228571	0.085714	0.761905
14	University of Mumbai	18.41666667	18.13889	0.166667	24.62963
15	Banaras Hindu University	288.3529412	287.8235	0.529412	384.8235
16	Indian Institute of Technology Hyderabad	307.6153846	305.641	1.410256	410.906
17	Birla Institute of Technology and Science, Pilani	14722.15152	14721.88	0.060606	19629.51
18	Indian Institute of Technology Indore	10.02777778	5.666667	4.138889	16.05556
19	Savitribai Phule Pune University	0	0	0	0
20	Alagappa University, Karaikudi	35.80769231	35.80769	0	47.74359
21	Indian Institute of Technology Bhubaneswar	505.1764706	429.7059	74.82353	723.2353
22	Indian Institute of Technology Ropar	492.6666667	488.8056	3.694444	659.2963
23	Symbiosis International (Deemed University)	11.46666667	0.033333	11.43333	22.91111
24	Institute of Chemical Technology (UDCT), Mumbai	0.333333333	0.148148	0	0.382716
25	IIIT – Allahabad	3.875	3.625	0.0625	5.145833
	Total	710.5192519	660.8064	48.25193	979.04

*Figures in parenthesis indicates percentage

Web Impact Factor of selected university library websites:

It is evident from analysis of the data that the Simple Web Impact Factor (SWIF) of library website of Birla Institute of Technology and Science, Pilani is 14722.15 at Rank 1st followed by library website of Indian Institute of Technology

Bombay (IITB) at 2nd rank with SWIF of 839.71. Moreover, library website of Indian Institute of Technology Kanpur (IITK) at 3rd rank with SWIF of 745.54. Similarly, the Internal Web Impact Factor (IWIF) was analyzed among selected library website it's clear that the top three library websites with IWIF of 14721.87, 748.46 and 488.80 among the selected university library websites that are library website of Birla Institute of Technology and Science, Pilani; library website of Indian Institute of Technology Bombay (IITB) and library website of Indian Institute of Technology Ropar, respectively. Moreover, data further reveals that the EWIF was comparatively low and it raises the question mark, and shows the negative collaboration of libraries. The top three library websites in terms of EWIF are library website of Indian Institute of Technology Kanpur (IITK) with 580.89 EWIF , library website of Indian Institute of Technology Bombay (IITB) with 89.53 EWIF and library website of Indian Institute of Technology Delhi (IITD) with 81.68 EWIF (Table 4).

Findings and conclusion

Now, its electronic age there is need of better initiatives for libraries to survive in present scenario of global world. Everything is online libraries are no more far away. Libraries provide online access to plenty of sources and provide abundant services. The whole process of libraries is depending on library websites. Library websites are interface between users and library. Library websites play an important in order to reach maximum users, holding lots of information and directs towards treasure of knowledge viz access to subscribed bibliographic and full text databases, access to subscribed journals and books, access to open journals, open books and much more. Google is not always satisfaction of users, many a times they feel confused about selection of material what they want.

The findings of present work further strengthen the belief that libraries are trying to do best. The major findings of the study are like that the Domain Authority was find out in selected library websites of universities. The page authority of the study is satisfactory, not as good as domain authority. Further its was evident from the analysis that there is a diverse difference between the various types of links (Internal Links, External Links and Total links) hence, it results negative impact on various web impact factors (SWIF, IWIF and EWIF), the overall total link strength is good. Furthermore, analysis shows that external links create a question mark its because only few percent library websites witness a good number of external links rest the result was negative.

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